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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/600,590	07/19/2000	BERNARD ASPAR	025219-268	5219

7590 07/14/2004

ROBERT E. KREBS
THELEN REID & PRIEST LLP
P.O. BOX 640640
SAN JOSE, CA 95164-0640

EXAMINER

KRUER, KEVIN R

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 07/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/600,590

Applicant(s)

ASPAR ET AL.

Examiner

Kevin R Krueer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17, 19-29 and 31-49 is/are pending in the application.
- 4a) Of the above claim(s) 2-12 and 25-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 13-17, 19-24, 29 and 31-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on July 19, 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 8, 2004 has been entered.

Priority

2. The first line of the specification after the title should read as follows:
- - This application is a national stage application under 35 U.S.C. 371 of Patent Cooperation Treaty application serial number PCT/FR99/00187, filed February 29, 1999, which claims priority under 35 U.S.C. 119 to French application 98/01061, filed January 30, 1998.- -

Drawings

3. The drawings filed July 19, 2000 are accepted.

Election/Restriction

4. Claims 2-12 and 25-28 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected method of making a compliant substrate, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 8.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 13-17, 19-23, 29, 31-33, 35-43, and 45-48 are rejected under 35 U.S.C. 102(b) as being anticipated by Bisaro et al (US 5,414,894).

Bisaro teaches a compliant substrate as depicted in Figure 4d. The laminate comprises a substrate (10), a monocrystalline zone (13) made by implanting ions through the substrate (col 4, lines 64+), a preliminary layer (11) on said monocrystalline zone (col 4, line 52+), an epitaxial growth layer (16) on said preliminary layer (col 5, lines 12+) which can be ion implanted (15), and a final layer of epitaxial growth layer (17). Ion that can be implanted include Mn, Al, Si, Cr, Fe, Ni Co, CU, Ge, Sn, Zn Cd, Ti C, Cl, B, Ar, P, Le, Au, Ni, oxygen, hydrogen, fluorine, Si, Br, and S (col 3, lines 37+). The layers may comprise semiconductor materials such as silicon, germanium, or the like (col 6, lines 34+).

The ion implantation of the substrate reads on the claimed "joining means" of claim 35. Furthermore, the ion implantation of the substrate is taught to create anchoring points that are centered at a depth R_p and having a width of $2.35XR_0$ (col 3, lines 46+). Said anchoring points are herein understood to read on the claimed "microcavities" of claim 1. The epitaxial growth layer reads on the claimed "thin layer." The claimed "intermediate layer" is met by the preliminary layer (11). Bisaro teaches

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said layer may be made from GaAs (see Fig 4d), arsenic, gallium, Si, or a number of other materials (col 4, lines 57+). Since the layer is amorphous, the examiner takes the position it is inherently "non-homogeneous."

With respect to claim 13, the bonding energy between the epitaxial growth layer (16) (which reads on the claimed "the thin layer") and the epitaxial growth layer (17) is altered by ion implantation. Ion implantation is known to affect the surface's roughness that would read on the claimed "defects." Claim 22 is met when the ion used to implant the thin layer is a dopant (see col 3, lines 37+).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 24, 34, 44, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bisaro et al. (US 5,141,894), as applied to claims 1, 13-17, 19-23, 29, 31-33, 35-43 and 45-48 above, and further in view of Yamashita (US 3,742,318).

Bisaro is relied upon as above. Specifically, Bisaro teaches that the epitaxial growth layer (17) may comprise semiconductor layers such as silicon. Bisaro does not teach that silicon alloys may be utilized. However, Si, Ge, and SiC are known in the art as semiconductors that can be used interchangeably (see '318, col 3, lines 16+). In order to rely on equivalence as a rationale supporting an obviousness rejection, the equivalency must be recognized in the prior art, In re Ruff, 256 F.2d 590, 118 USPQ

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340 (CCPA 1958). Thus, it would have been obvious to utilize SiC as the semiconductor of the epitaxial growth layers taught in Bisaro because Yamashita teaches that it is used interchangeably in the semiconductor art with Si and Ge.

Response to Arguments

Applicant's arguments filed April 8, 2004 have been fully considered but they are not persuasive.

Applicant argues that Bisaro does not disclose a joining means having microcavities. Rather, Bisaro teaches the creation of perturbation zones at an atomic scale by ion implantation. The examiner respectfully disagrees with applicant's conclusion that the implanted ions do not result in microcavities. It is known in the art that ion implantation by bombardment creates microcavities. Applicant's specification supports this conclusion. Specifically, FR-A-2681472 teaches that implantation by the bombardment of ions creates microcavities (cited in the specification on page 5, line 31- page 8, line 9). Furthermore, Bisaro teaches that the implantation of ions creates anchoring points that are centered at a depth R_p and having a width of $2.35X R_0$ (col 3, lines 46+). Said anchoring points are understood to read on the claimed "microcavities."

Applicant argues that the weak implantation dose disclosed and the large size of the implanted Ar ions used in Bisaro would not result in the formation of microcavities. In response to applicant's argument, the examiner reminds applicant that counsel's argument cannot take the place of evidence. If Applicant continues to argue that the ion implantation taught in Bisaro does not result in the formation of microcavities, Applicant is requested to provide evidence in support of such a conclusion.

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Thus, Applicant's arguments are not persuasive.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin R Kruer whose telephone number is 571-272-1510. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on 571-272-1516. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kevin R. Kruer
Patent Examiner-Art Unit 1773